GRECHIKHIN, L.I.; SHIMANOVICH, V.D.

Study of the jet of a plasma generator. Opt.i spektr. 13
no.5:626-629 N '62.   (MIRA 15:12)

(Plasma (Ionized gases))

GRECHIKHIN, L.I.; MIN'KO, L.Ya.

Structure of a plasma jet produced by a pulse discharge. Zhur.
tekh. fiz. 32 no.9:1072-1073 S '62.   (MIRA 15:9)

1. Institut fiziki AN BSSR, Minsk.
                    (Plasma (Ionized gases))

GRECHIKHIN, L.I.-

Broadening of the 4982.8 $\overset{o}{A}$ line of sodium in a brush type
d-c arc. Opt. i spektr. 13 no.4:578-579 0 '62. (MIRA 16:3)
            (Electric arc)   (Sodium—Spectra)

S/250/63/007/003/003/006
A059/A126

AUTHORS: Grechikhin, L.I., Yel'yashevich, M.A.

TITLE: The broadening of spectral lines showing the linear Stark effect in plasma

PERIODICAL: Doklady Akademii nauk BSSR, v. 7, no. 3, 1963, 157 - 159

TEXT: The contour of spectral lines in plasma originating by broadening due to the linear Stark effect, which was previously calculated by J. Holtsmark (Phys. Zs., v. 20, 162, 1919), is defined more accurately in this paper. In the plasma, quasi-state electric fields from 0 to ∞ with the distribution probability $W(F) \, dF = \frac{1}{F_0} W(\beta) \, d\beta$ can arise, where $\beta = F/F_0$ and $F_0 = 2.61 \, eN^{2/8}$ - the normal intensity of the field. The general half-width of the line was found to be

$$\gamma = 2 \Delta v_{1/2} = 2 \, a \, \beta_{1/2} \, F_0 = 2.80 \, a \, F_0 = 7.31 \, aeN^{2/3} , \qquad (10)$$

where $\beta_{1/2}$, which determines the frequency shift $v_{1/2}$, is 1.40, a is the con-

Card 1/2

The broadening of spectral lines showing the ....

S/250/63/007/003/003/006
A059/A126

stant of the linear Stark effect for a given spectral line, and F is the action of the electric field. The constant a of the linear Stark effect as determined by the authors is only half the value used in the equation derived by Holtsmark.

ASSOCIATION: Institut fiziki AN BSSR (Institute of Physics of the AS BSSR)

SUBMITTED: November 20, 1962

Card 2/2

S/075/63/018/001/001/010
E202/E492

AUTHOR: Grechikhin, L.I.

TITLE: Effect of polarity on the physical properties of the
             plasma stress of an arc generator

PERIODICAL: Zhurnal analiticheskoy khimii, v.18, no.1, 1963, 20-23

TEXT: The same type of plasma arc generator was used as that
described by M.Margoshes and B.F.Scribner (Spectrochim Acta, 14,
no.2, 1959, 138) and Yu.K.Kravatskheli (Zavodskaya laboratoriya,
25, 1960, 557).   The d.c. source dissipating 2 kW in the arc was
employed.   A spectrum was registered simultaneously on the
ИСП-28 (ISP-28) and ИСП-51 (ISP-51) spectrographs, using the
camera УФ-85 (UF-85).   The diameter of the constructing nozzle
was 1.8 mm.   Industrial nitrogen was used for arc stabilization.
The results of experimental investigations showed that the
polarity considerably influenced the performance of the arc and the
nature of the emission spectrum.   With the nozzle working as an
anode, the jet was more stable and there was absence of side-
tracking channels.   The current fluctuations of the discharge were
also quite negligible.   However, with the nozzle acting as a
Card 1/3

Effect of polarity ...

S/075/63/018/001/001/010
E202/E492

cathode, considerable jet instability and intensive side-trackings
were observed - also the brightness of the jet was increased.
The discharge current in the latter case dropped very rapidly,
while the arc voltage increased in such a way that the power in the
arc remained substantially constant. It was also found that the
intensity of the spectral lines derived from the nozzle material
was considerably stronger when the nozzle worked as a cathode.
The authors used brass and spectroscopically pure carbon as the
electrode materials. When the nozzle was made of brass and the
ro· electrode of pure carbon, the intensity of the spectral lines
due to brass increased very markedly when the nozzle worked as a
cathode. On reversing the electrode materials, the emission
spectrum contained a number of lines due to single-ionized copper,
and also emission bands of the molecular ion of N_2^+. The
temperature was also measured along the axis from the relative
intensities of the Cu5106 and Cu5153. The authors concluded their
work by studying the effect of polarity on the broadening of
spectral lines. A triplet of zinc $4^3P_2-5^3S_1$ $\lambda4810.5$ Å,
$4^3P_1-5^3S_1$ $\lambda4722.2$ Å and $4^3P_0-5^3S_1$ $\lambda4680.1$ Å was selected.
Card 2/3

Effect of polarity ...

S/075/63/018/001/001/010
E202/E492

A considerable broadening of the above lines was observed when the nozzle worked as a cathode.   There are 4 figures.

ASSOCIATION: Institut fiziki AN BSSR, Minsk
(Institute of Physics AS BSSR, Minsk)

Card 3/3

ACCESSION NR: AP4004140   S/0294/63/001/002/0198/0202

AUTHOR: Grechikhin, L. I.

TITLE: Determination of charged particle and neutral atom concen-
trations from self-reversal of spectral line contours in plasma

SOURCE: Teplofizika vy*sokikh temperatur, v. 1, no. 2, 1963, 198-
202

TOPIC TAGS: plasma, spectroscopy, spectral line reversal, lithium,
lithium chloride, neutral atom, charged particle, electron, dc arc,
arc jet, plasma arc, spectral line

ABSTRACT: In view of the interest attaching to a simultaneous mea-
surement of both neutral-atom and charged-particle concentrations
in a plasma, the author investigates and demonstrates the feasi-
bility of an experimental determination of the inhomogeneity para-
meter of a source using any self-inverted pair of spectral lines, on
the basis of the theory of self inversion of spectral lines developed
by R. D. Cowan and G. H. Dieke (Rev. Mod. Phys. v. 20, 418, 1948).

Card 1/2

ACCESSION NR: AP4004140

The lithium line 6103.64 Å was used to determine simultaneously the concentrations of absorbing atoms (neutral) and charged particles (electrons). The concentrations of neutral lithium atoms and the electron concentrations in the plasma of a dc arc were measured by filling an arc electrode (either cathode or anode) with LiCl. Orig. art. has: 2 figures, 10 formulas, and 1 table.

ASSOCIATION: Institut fiziki AN BSSR (Physics Institute, AN BSSR)

SUBMITTED: 23May63   DATE ACQ: 26Dec63   ENCL: 00

SUB CODE: AS, PR   NO REF SOV: 004   OTHER: 002

Card   2/2

GRECHIKHIN, L.I.; TYUNINA, Ye.S.

Forbidden lines of natrium and lithium atoms in the flame of a
d-c arc. Teplofiz. vys. temp. 1 no.3:399-403 N-D '63. (MIRA 17:3)

1. Institut fiziki AN BSSR.

ACCESSION NO: AP3003040

S/0250/63/007/005/0313/0316

AUTHOR: Grechikhin, L. I.

TITLE: Resonance broadening of spectral lines and its utilization in determining neutral atom concentration in arc discharge plasmas (Presented by Academician of the AN BSSR M. A. Yol'yashevich)

SOURCE: AN BSSR. Doklady, v. 7, no. 5, 1963, 313-316

TOPIC TAGS: collision theory, line broadening, half width, absorption parameter, arc discharge, plasma, resonance line broadening

ABSTRACT: Two expressions are derived: one from collision theory of line broadening and one from the statistical theory defining line half-width respectively, by

$$\gamma = \pm \frac{\Delta\omega_{max}}{\sqrt{p-1}}$$

$$\gamma = \pm \frac{1.27\Delta\omega_{max}}{\sqrt{x}}$$

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ACCESSION NO: AP3003040

where $p > 1$ is the absorption parameter and x is related to p through

$$\frac{1}{x}(1 - e^{-x}) = \frac{1}{p}.$$

The criterion for the application of collision theory is given by $\Delta\omega \ll \Delta\omega_L$ and for the statistical theory by $\Delta\omega \gg \Delta\omega_L$. An example is given for an arc discharge plasma at a temperature of 5000K and resonance line broadening of λ 6103Å for lithium atom and λ 5890Å for sodium. It is found that for atom concentrations less than 10^{19} per cm^3 the collision theory can be used, whereas for higher values the statistical theory is applicable. Orig. art. has: 19 formulas and 2 figures.

ASSOCIATION: Institut fiziki AN BSSR (Institute of Physics AN BSSR)

SUBMITTED: 18Oct62   DATE ACQ: 22Jul63   ENCL: 00

SUB CODE: PH   NO REF SOV: 004   OTHER: 008

Card 2/2

GRE HISHKIN, I.i.; RYZHENKOV, V.Ye.

Emetic effect of apomorphine, morphine and aconitine in various
types of administration. Farm. i toks. 26 no.5:578-58; S-O '63.
(MIRA 17:8)

1. Otdel farmakologii (zav. - deystvitel'nyy chlen AMN SSSR
prof. S.V. Anichkov) Instituta eksperimental'noy meditsiny
AMN SSSR.

L 6624-65   EWT(1)/EPA(w)-2/EEC(t)   Pab-24   AFETR/AEDC(a)/ASD(a)-5/AEDC(b)/'
RAEM(i)/ASD(p)-3/SSD/BSD/AFWL/ESD(gs)/ESD(t)
ACCESSION NR: AP4047372   S/0294/64/002/005/0689/0695

85
83

AUTHORS: Grechikhin, L. I.; Tyunina, Ye. S.

TITLE: Gas pressure effect on physical properties of arc discharge

SOURCE: Teplofizika vy*sokikh temperatur, v. 2, no. 5, 1964, 689-695

TOPIC TAGS: plasma arc, Stark effect, spectroscopy, spectrum line, discharge
plasma, pressure vessel/DFS 13 spectrograph

ABSTRACT: The effect of gas pressure on properties of a constant-current arc was
investigated experimentally. The arc was struck between carbon electrodes inside
a high-pressure chamber filled with argon gas. The spectra of the discharge were
photographed by means of a DFS-13 spectrograph. The arc temperatures were measured
using relative line intensities of copper, 5105 and 5218.2 Å. A strong line
broadening was observed at 5 atm pressures, and relative line intensities were
determined from areas, with ± 5 percent accuracy, under the assumption of thermo-
dynamic equilibrium. The effect of surrounding gas pressure on the arc was deter-
mined by investigating the spectral curves of sodium atom lines from the decompo-
sition of NaCl salt. A strong asymmetry was noticed in the line contours, with

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L 6624-65
ACCESSION NR: AP4047372

2

excessive line broadening at the long wavelength end of the spectrum. This was
attributed to increasing homogeneity in the plasma upon increasing the gas pres-
sure. The sharp and the diffuse series of sodium atoms were studied carefully as a
function of argon pressure. A noticeable rise in arc temperature was observed
along with a strong Stark-broadening effect. "The authors use this opportunity to
express their sincere gratitude to M. A. Yel'yashevich for his constant interest
in the work." Orig. art. has: 3 tables and 3 figures.

ASSOCIATION: Institut fiziki, Akademii nauk BSSR (Institute of Physics, Academy
of Sciences BSSR)

SUBMITTED: 31Jan64   ENCL: 00

SUB CODE: ME, EM   NO REF SOV: 008   OTHER: 004

Card 2/2

GRECHIKHIN, L.I.; MIN'KO, L.Ya.

> Use of high-speed spectral motion pictures for studying rapid
> self-luminous processes. Zhur.nauch. i prikl.fot. i kin. 9
> no.2:114-116 Mr-Ap '64.   (MIRA 17:4)
>
> 1. Institut fiziki AN Belorusskoy SSR.

ACCESSION NR: AP4026818   S/0077/64/009/002/0114/0116

AUTHORS: Grechikhin, L. I.; Min'ko, L. Ya.

TITLE: Application of high speed motion photography for investigating rapid self-luminous processes

TOPIC TAGS: high speed photography, spectral photography, self luminescence, radiation spectrum, copper emission, radiation temperature, plasma emission, camera SFR L, monochromator UM 2, photoregister ZhFR 1, microphotometer MF 4, Pankhrom 10 film

ABSTRACT: The authors have experimented with the use of high-speed spectral photography to investigate spectral fluctuations of a radiating body in all zones. Observations were made with the motion picture camera SFR-L with monochromator UM-2 and supplementary spectrum-producing apparatus   (see Fig. 1 on the Enclosure). A battery of condensers (60 microfarads capacitance and a potential of 2.5 kv) was used to obtain plasma emission. Also employed were the photoregister ZhFR-1,

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ACCESSION NR: AP4026818

Pankhrom-10, type 600 film, and the microphotometer MF-4. The test photographs revealed a complex emission structure from the test material (copper). Temperature measurements were made by the method proposed by L. I. Mandel'shtam and N. K. Sukhodrev (Zh. eksperim. i teor. fiz., 1953, 24,701). Orig. art. has: 1 figure, 2 photographs, and 1 equation.

ASSOCIATION: Institut fiziki Akademii nauk, Belorusskoy SSR (Institute of Physics, Academy of Sciences, Belorussian SSR)

SUBMITTED: 12Apr63   ENCL: 01

SUB CODE: ES, OP   NO REF SOV: 006   OTHER: 001

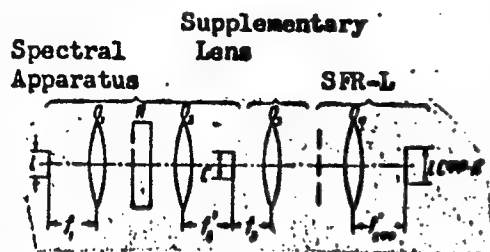Card 2/3

Spectral
Apparatus

Supplementary
Lens

SFR-L

Fig. 1. Optical scheme of the combination
of the spectral apparatus and speed
camera SFR-L

O_1 - Objective of collimator of the
spectral apparatus

π - Dispersion system

O_2 - Objective of camera

O_3 - Supplementary Lens

O_4 - Objective of camera

Card 3/3

L 5447-66
EWT(1)/EWT(m)/ETC/EPF(n)-2/EWG(m)/EPA(w)-2/EWP(t)/EWP(b)   IJP(c)
                JD JG/AT

ACC NR: AP5025085   SOURCE CODE: UR/0368/65/003/003/0201/0208

AUTHORS: Grechikhin, L. I.; Yel'yashevich, M. A.   76
                                                                                    B
ORG: none

TITLE: Application of the quadratic Stark effect in the determination of concen-
tration of charged particles in plasma by the spectral line broadening of lithium
and sodium

SOURCE: Zhurnal prikladnoy spektroskopii, v. 3, no. 3, 1965, 201-208

TOPIC TAGS: Stark effect, line broadening, charged particle concentration,
lithium, sodium

ABSTRACT: Stark constants for the quadratic Stark effect for the sharp, principal,
and diffuse lines of lithium of sodium were calculated. The calculation was based
on the well known second order perturbation theory expression for energy level
displacement of one-electron systems subject to an electric field

Card 1/4   UDC: 543.42
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L 5447-66
ACC NR: AP5025085

$$C_{1,k} = \frac{e^2}{h} \sum_{n'} \left\{ \frac{[(L+1)^2 - M_L^2](n, L \mid r \mid n', L+1)^2}{4(L+1)^2 - 1} + \frac{(L^2 - M_L^2)(n, L \mid r \mid n', L-1)^2}{4L^2 - 1} \right\}$$

The results of calculation are given in tabular form. The effect of electron and
ion impacts on the spectral line shape was determined by the use of the nonstation-
ary electron impact theory and the Holtsmark theory respectively. It was found that
the overall half-line width was almost equal to the sum of the half-line width due
to electronic and ionic effects respectively. It is concluded that the quadratic
Stark effect becomes noticeable for different lines at different charged particle
concentrations, that a particular line may disappear completely at sufficiently
high charged particle concentration, and that the diffuse series lines and the
higher members of the sharp series are particularly sensitive to charged particles
concentrations (see Fig. 1). The concentration of charged particles in a dc arc
was calculated and compared with data reported by L. I. Grechikhin (Opt i spektr.,
13, 578, 1962). The calculated values are in good agreement with experimental data.

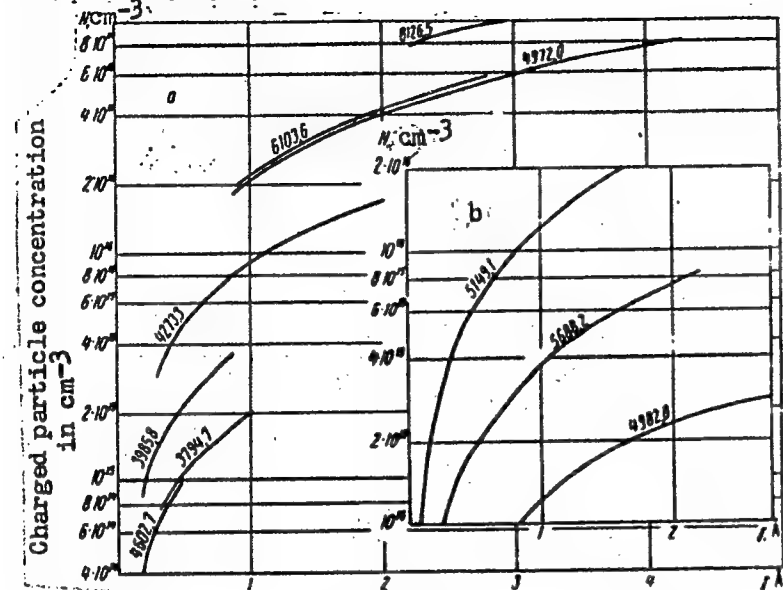Card 2/4

L 5447-66

ACC NR: AP5025085

Fig. 1. The change
in the half-line
width of the
lithium atom (a)
and sodium atom (b)
lines as a function
of charged particle
concentration

Card 3/4

L 5447-66
ACC NR: AP5025085

Orig. art. has: 4 tables, 3 graphs, and 6 equations.

SUB CODE: OP/   SUBM DATE: 16Apr65/   ORIG REF: 007/   OTH REF: 003

Card 4/4

L 1687-66   EWT(1)/EWT(m)/EPF(n)-2/EWG(m)/EPA(w)-2/EWP(t)/WP(b)   IJP(c)   JD/AT

ACCESSION NR: AP5020552   UR/0294/65/003/004/0520/0523

AUTHOR: Bakanovich, G. I.; Grechikhin, L. I.

TITLE: Use of emission spectra of the copper atom for diagnostics of a plasma

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 4, 1965, 520-523

TOPIC TAGS: plasma diagnostics, emission spectrum, copper, Stark effect, Van der Waals equation, electrodes, plasma charged particle

ABSTRACT: Since copper pairs formed by erosion of electrodes exist in all types of plasma apparatus (plasmatrons, magnetohydrodynamic generators, arcs, etc.) the work described in the article is aimed at selection of the corresponding spectral lines, at fixing their basic constants (transition probability and the Stark and van der Waals constants) at evaluating the effect of various factors on the width of the selected lines, and at explaining errors in the measurement of temperature and concentration of the charged particles. The experiments were carried out with a direct current arc (i = 8 amp) between copper or brass electrodes under

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L 1687-66

ACCESSION NR: AP5020552   6

water. The emission spectra were measured with a DFS-13 spectrograph. The temperature of the arc was determined from two pairs of copper lines: 5105.5 : 5153.2 Å and 5105.5 : 4530.8 Å. Using the theoretical value of the Stark constant and the obtained experimental values, the article cites a value of $(1.3 \pm 0.3) 10^{16}$ cm^{-3} for the concentration of charged particles in a plasma in a direct current arc between copper electrodes under water. The concentration of charged particles increases compared to the same arc in the atmosphere, for which a value of 10^{15} cm^{-3} is quoted. The temperature rises to approximately 1500 K. "In conclusion, the authors wish to thank M. A. El'yashevich for his constant interest in the work and for his discussion of the results. " Orig. art. has: 3 tables

ASSOCIATION: Institut fiziki, Akademii nauk BSSR (Institute of Physics, Academy of Sciences, BSSR)

SUBMITTED: 21Aug64   ENCL: 00   SUB CODE: GC, EM

NR REF SOV: 006   OTHER: 006

Card 2/2

L 62699-65   EWT(1)/EWP(m)/EPF(n)-2/EWO(m)/EWA(d)/EPA(w)-2/FCS(k)/EWA(h)/EWA(c)
Pz-6/Po-4/Pd-1/Pi-4   IJP(c)   WW/AT

ACCESSION NR: AP5020736

UR/0057/65/035/008/1454/1460

533.9

AUTHOR: Grechikhin, L. I.; Min'ko, L. Ya.

TITLE: Generation and investigation of shock waves and supersonic plasma streams in a discharge shock tube

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 8, 1965, 1454-1460

TOPIC TAGS: shock wave, shock tube, wave generation, plasma stream, supersonic plasma, plasma generation, plasma discharge

ABSTRACT: An experimental investigation was made of the propagation of electrody-
namically excited shock waves and plasma streams in a discharge shock tube. Con-
ical, cylindrical, and coaxial discharge tubes were used. The merits of each as a
plasma acceleration mechanism are discussed. Certain relationships between the
electrodynamically excited shock waves and plasma streams are discussed. The results
indicate that the plasma stream consists of smaller, individual streams; such a
structure enhances the possibility of accurate measurement of propagation velocity,
which in the experiment was determined within a 10% error. The wave structure of
plasma currents and the nature of variations of wave structure as a function of the
initial pressure in the tube were also investigated. Orig. art. has: 4 figures.

Card 1/2   [YK]

L 62699-65

ACCESSION NR: AP5020736

ASSOCIATION: Institut fiziki AN BSSR, Minsk (Physics Institute, AN BSSR)

SUBMITTED: 27May64   ENCL: 00   SUB CODE: ME

NO REF SOV: 005   OTHER: 001   ATD PRESS: 4064

Card 2/2

L 13909-66   EWT(1)/ETC(F)/EPF(n)-2/EWG(m)   IJP(c)   AT

ACC NR: AP6002357   SOURCE CODE: UR/0207/65/000/006/0047/0052

AUTHOR: .Grechikhin, L. I. (Minsk); Min'ko, L. Ya. (Minsk); Nagornaya, N. I. (Minsk)

ORG: none

TITLE: Spectroscopic study of the properties of a supersonic plasma jet

SOURCE: Zhurnal prikladnoy mekhaniki i teknicheskoy fiziki, no. 6, 1965, 47-52

TOPIC TAGS: plasma jet, plasma temperature, shock wave propagation, plasma charged particle, spectroscopic analysis

ABSTRACT: The authors spectroscopically investigate the emission spectrum of a plasma jet at wavelengths from 3800 to 5500 Å. The variation of the temperature and concentration of the charged particles along the jet was measured in relation to the polarity for a shock-wave jet and a periodic structure jet. In the spectrum of the shock-wave jet the authors observed a continuous spectrum at the base of the jet the intensity of which in the direction of flow noticeably diminishes and again increases jumplike in the shock wave and then abruptly falls off. In the spectrum of the periodic-structure jet there is an alternation of maxima and minima of intensities of the continuous spectrum and of the intensity of the spectral lines corresponding to compression and rarefaction points with a gradual weakening toward the end of the jet. The temperature in the plasma jet was determined by the method of relative intensities with the use of two pairs of copper lines. The temperature was measured along the jet both for the

Card   1/2

L 13909-66

ACC NR: AP6002357

jet with a shock wave and for the jet with a periodic structure, at the base and in the rarefaction and compression zones. The results of the measurements lay along a straight line, which proves the feasibility of a Boltzmann distribution of the atoms with respect to the excited levels. The concentration of charged particles in the periodic-structure jet was higher than in the shock-wave jet. This was due to the higher temperatures and pressures in the jet. Authors take this opportunity to express sincere gratitude to M. A. Yel'yashevich for discussing the results of the work. Orig. art. has: 4 figures and 1 table.

SUB CODE: 20 / SUBM DATE: 26Apr65 / ORIG REF: 008 / OTH REF: 002

Card   2/2

L 16576-66 EWT(1)
ACC NR: AP6006960   SOURCE CODE: UR/0368/66/004/002/0112/0116

AUTHOR: Grechikhin, L. I.; Tyunina, Ye. S.

ORG: none

TITLE: Determination of comparative and absolute intensities of self-reversal
and self-absorption spectral lines under arc discharge conditions

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 2, 1966, 112-116

TOPIC TAGS: spectral energy distribution, spectral line, luminescence spectrum,
light absorption, optic measurement, arc discharge, line intensity

ABSTRACT: The effect of self-reversal and self-absorption in spectral lines on
the measurement of relative and absolute intensities under arc discharge condi-
tions is investigated on the basis of Cowan and Duke theory. It is shown that the
calculation of the self-absorption suggested by the Cowan and Duke theory leads
to reasonable values of source temperatures measured according to relative inten-
sities. A measurement method of the absolute intensity of self-reversed lines is
proposed. Orig. art. has: 1 figure, 7 formulas, and 1 table. [Based on author's
abstract]

Card 1/2   UDC: 535.33

L 16576-66
ACC NR: AP6006960

0

SUB CODE: 14, 20/ SUBM DATE: 02Dec64/ ORIG REF: 007/ OTH REF: 002/

Card 2/2 *SM*

L 31135-66   EPF(n)-2/EEC(k)-2/EWA(h)/EWP(k)/EWT(1)/FBD/ETC(f)/EWG(m)/T   IJP(c).

ACC NR: AP6012849   AT/WG   SOURCE CODE: UR/0368/66/004/004/0293/0297

AUTHOR: Grechikhin, L. I.; Min'ko, L. Ya.

ORG: none

TITLE: Unipolar pulsed plasma generator combined with a laser as a source for obtaining plasma jets

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 4, 1966, 293-297

TOPIC TAGS: discharge plasma, plasma beam, plasma jet, pulsed plasma generator, laser generated plasma, neodymium laser, spectral analysis

ABSTRACT: A pulsed plasma generator, fired by a laser-generated plasma, is described (see Fig. 1.) A 50-j laser pulse ($\sim$1 msec, $\lambda = 1.06$ μ) was focused by means of an f:270 mm lens on a material embedded in brass-rod electrode 1, producing a plasma. The plasma filled quartz-glass discharge chamber 3, causing discharge of artificial line 5 (consisting of a 6-cell IM 3-100 condenser bank which generated a unipolar $\sim$300 µsec current pulse) between ring 2 and rod 1 brass electrodes located inside the chamber. The resulting plasma jet consisted of plasmas of the eroded electrode and chamber-wall materials. Under these conditions, the attendant pulsed discharge further heated the laser-generated plasma, causing a sharp increase in the plasma generator pressure (relative to the atmospheric pressure), and a quasistationary supersonic plasma jet of a given chemical composition was emitted from the ring electrode.

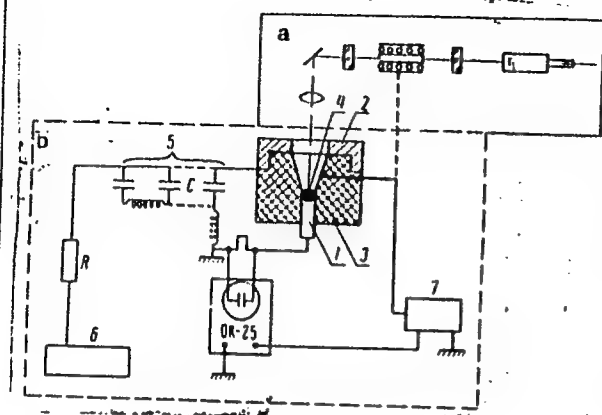Card 1/4

L 31135-66

ACC NR: AP6012849

Fig. 1.   Schematic of the generator (b) and laser (a)

The generation of the plasma jet was observed by means of high-speed photo-graphy and spectroscopically. The de-pendence of the plasma jet velocity on the discharge voltage (at C = 600 μf) is shown in Table 1. Unlike in the con-ventionally-fired plasma generators described by the authors elsewhere (ZhPMTF, no. 3, 1965), where a gas is fired to produce a plasma, the plasma jet velocity in a laser-generated plasma (4--10 km/sec) is independent of the electrode polarity. The plasma jet spectra were studied by means of an ISP-51 spectrograph with an f = 270 mm camera in the 3800--6500 Å range, with a longitudinal focusing of the jet on the spectrograph slit. Qualitative spectral analysis showed that the plasma jet consisted of vaporized electrode and discharge-chamber (glass) materials. The emission spectrum consisted basically of copper lines, with well-defined hydro-

Card   2/4

L 31135-66

ACC NR: AP6012849

Table 1. . Dependence of plasma jet velocity on discharge voltage

Voltage, Kv	Velocity, km/sec
3,0	10,0
2,0	7,7
1,5	6,7
1,0	5,6
0,5	4,2

Table 2. Charged particle concentration along a plasma jet

Distance from jet base, mm	Charged particle concentration, cm^{-3} ring electrode polarity			
	positive		negative	
	CuI 4530.8Å	H_β	CuI 4530.8Å	H_β
0	$7.6 \cdot 10^{14}$	$2 \cdot 10^{17}$	$6.6 \cdot 10^{14}$	$2.0 \cdot 10^{17}$
6.5	$4.8 \cdot 10^{14}$		$5.5 \cdot 10^{14}$	
13	$4.4 \cdot 10^{14}$		$4.8 \cdot 10^{14}$	
19.6	$3.8 \cdot 10^{14}$		$3.2 \cdot 10^{14}$	

U = 0.5 kv; C – 600 µf; ν = 2.5 mm. Lose output energy $o_\nu \sim 1oj$.

gen (Balmer) lines. The latter are due to the discharge-chamber wall materials and were not observed previously even at a 3-kv conventional excitation. The copper emission spectrum was used for plasma diagnostics to determine the charged particle concentration and plasma temperature. The latter was determined by means of the relative intensity method using two pairs of copper lines 5153.2 and 5105.5 Å, and 4530.8 and 5105.5 Å. Only the temperature at the jet base could be measured (~10,000K). The charged particle concentration was measured as a function of line broadening of the CuI line (4530.8 Å), on the H_β line at the jet base, and the results are shown

Card   3/4

L 3113°-66

ACC NR: AP6012849   O

in Table 2. The divergence of results for the CuI and H_β lines is attributed to the cross section nonuniformities of the jet. The charged-particle concentration in a laser-generated plasma ($\sim 5 \cdot 10^{16}$ cm^{-3}) is independent of the polarity of the ring electrode. This indicates that a laser-fired pulsed plasma generator can be used in spectral analysis as a high-temperature excitation source. This requires low-voltage discharges at which the least pressure gradient occurs in the discharge chamber and the surrounding medium, reducing the jet broadening and increasing its uniformity. Orig. art. has: 2 tables and 3 figures.   [YK]

SUB CODE: 20/ SUBM DATE: 20Aug65/ ORIG REF: 006/ ATD PRESS: 4241

Card   4/4 (C

L 32618-66   EWT(1)/ETC(f)   IJP(c)   AT

AUTHOR: Grechikhin, L. I.; Skutov, D. K.

ORG: none

TITLE: Use of broadening and shift of spectral lines of cesium to determine the concentration of charged particles and neutral atoms under conditions of a dc arc plasma

TOPIC TAGS: plasma arc, cesium plasma, plasma charged particle, plasma density, plasma diagnostics, spectral line, line shift, line broadening, Stark effect, Van der Waals force, Doppler effect

ABSTRACT: The purpose of the investigation was to ascertain and compare the usefulness of various cesium spectral lines for plasma diagnostics purposes. To this end, a method described earlier (ZhPS, v. 3, 201, 1965) was used to calculate the constants of the quadratic Stark effect for more than 40 spectral lines of cesium. The limiting charged-particle density that can be measured with the aid of each line was determined. The dc arc (4 - 8 amp) was produced between carbon electrodes, with a mixture of cesium salts with carbon pressed in one of the electrodes in different proportions. The emission spectra of the cesium plasma were photographed with a DFS-13 spectrograph. Eight spectral lines were chosen for the diagnostics, and their broadening under different types of interactions was calculated and tabulated. The experimental contours of these lines are derived and the concentrations of the charged

Card 1/2   UDC: 535.338

L 32618-66

ACC NR: AP6015588   /

particles and neutral atoms are calculated for a dc arc plasma. Methods of improving
the accuracy of the results are discussed. The influence of various interactions on
the broadening of the spectral lines of cesium is evaluated (Van der Waals interaction,
Stark effect in inhomogeneous fields, resonant interaction, and Doppler broadening).
The accuracy with which the line width can be used to determine the concentration is
~30% for charged particles and ~50% for neutral-atom concentrations. The results ob-
tained by different methods and with different lines were for most part in agreement.
Deviations are briefly discussed. The authors thank M. A. El'yashevich for a dis-
cussion of the work and valuable advice. Orig. art. has: 1 figure, 2 formulas, and
4 tables.

SUB CODE: 20/   SUBM DATE: 04May65/   ORIG REF: 010/   OTH REF: 010

Card 2/2 $\mathcal{D}_0$

L 02280-67   EWT(1)/EWP(m)   WW

ACC NR: AP6025244   SOURCE CODE: UR/0057/66/036/007/1202/1206

AUTHOR: Grechikhin, L.I.; Min'ko, L.Ya.

ORG: none

TITLE: Investigation of wave processes in a conical-electrode shock tube

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 7, 1202-1206

TOPIC TAGS: plasma shock wave, shock tube, shock wave reflection, shock wave inter-
action, supersonic flow

ABSTRACT: The authors (ZhTF, 35, 8, 1965) have previously found that under certain
conditions supersonic plasma streams can be formed in a shock tube, that these streams
have a complex structure due to wave processes, and that they can affect (and in parti-
cular, can accelerate) the motion of the luminous front. In the present paper they
report further experiments on plasma streams in a shock tube. The plasmas were pro-
duced by discharge of a capacitor between a conical electrode and an internal cylin-
drical electrode. The supersonic streams arose from expansion of the plasmas issuing
from the 4 cm diameter conical electrode into the 6 cm diameter glass drift tube. The
plasmas were observed by high speed cinematography and by streak photography, with
particular attention to behavior of the plasmas on reflection at the far end of the
tube. The velocity of the luminous front produced by a 2 kV discharge increased from
about 6 km/sec, when it issued from the electrode, to 14 km/sec, after it had traveled

Card 1/2   UDC: 533.9

L 02273-67   EWT(1)/EWP(m)   IJP(c) WW/AT

ACC NR: AP6025245   SOURCE CODE: UR/0057/66/036/007/1207/1210

AUTHOR: Grechikhin, L.I.; Min'ko, L.Ya.; Nagornaya, N.I.

ORG: none

TITLE: Spectroscopic investigation of the plasma in a conical-electrode shock tube

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 7, 1207-1210

TOPIC TAGS: plasma shock wave, shock tube, optic spectrum, electron density, Stark effect, Balmer series

ABSTRACT: The plasmas discussed in the accompanying paper by L.I.Grechikhin and L.Ya.Min'ko (ZhTF, 36, 1202, 1966 /see Abstract AP6025245/) were investigated spectroscopically in the range from 3800 to 7000 Å. Time integrated spectra were recorded of the light from the discharge chamber, the central region of the drift tube, and the reflection zone. These spectra showed that the plasmas had the same composition in all three regions and arose mainly from erosion of electrode and insulation materials in the discharge chamber. Electron densities were derived from the spectra in three different ways: from the depression of the Balmer series limit, from the linear Stark broadening of $H\beta$, and from the quadratic Stark broadening of CII 4267 Å. When two of the techniques were simultaneously applicable they gave concordant results. The charged particle densities were slightly higher in the reflection zone than in the

Card 1/2   UDC: 533.9.0

L 10087-67   ...T(1)   IJP(c)   AT
ACC NR: AP6024025   SOURCE CODE: UR/0250/66/010/004/0232/0235

AUTHOR: Grochikhin, L. I.

ORG: Institute of Physics AN BSSR (Institut fiziki AN BSSR)

TITLE: Forbidden transitions induced in atomic systems by homogeneous and inhomogeneous electric intermolecular fields in a plasma

SOURCE: AN BSSR. Doklady, v. 10, no. 4; 1966, 323-235

TOPIC TAGS: plasma electromagnetics, forbidden transition, selection rule, transition probability, plasma diagnostics

ABSTRACT: The author deals with transitions which are forbidden by the selection rules for electric dipole, electric quadrupole, magnetic dipole and similar transitions, which are produced in the plasma by the electric intermolecular field. The formulas for the transition probabilities and for the transition intensities are presented from various literature sources and the results of concrete calculations are presented for the intensity of the forbidden transitions in lithium, sodium, copper, and cesium. In the case of inhomogeneous electric fields, the results of the calculations are given for cesium only. Possible application of the results for

Card 1/2

GRECHIKHIN, N.S. (Novgorod, Vokzal'naya ul., 11, kv.20)

Closed isolated rupture of the pancreas. Vest. khir. 92 no.1:88
Ja '64.   (MIRA 17:11)

1. Iz travmatologicheskogo otdeleniya 1-y Novogorodskoy gorodskoy
bol'nitsy (glavnyy vrach – M.M. Pishchelev, nauchnyy rukovoditel'-
prof. A.L. Fisanovich).

KARAKIN, F.F.; RODICHEV, A.F.; PUTIY, G.P.; BASOV, A.P.; PYATAKOV,
      L.V.; RAUTSEP, A.P. [Rautsepp, A.]; BLAGONRAVOV, S.I.;
      GRECHIKHO, A.M.; DRUZHININ, N.N.; SHUKHMAN, D.I.; BAUSIN, A.F.;
      LOYKO, P.G.; CHERNAKOV, B.A.; SHORNIKOV, F.M.; SOPIN, P.F.

      Remarks of the members of the Conference. Torf. prom. 37 no.5:
      22-28 '60.   (MIRA 14:10)

      1. Ivanovskiy gosudarstvennyy torfotrest (for Karakin). 2.
      Sverdlovskiy torfotrest (for Rodichev). 3. Gosplan USSR (for
      Putiy). 4. Leningradskiy gosudarstvennyy trest torfyanoy promy-
      shlennosti (for Basov). 5. Moskovskiy oblastnoy sovnarkhoz
      (for Pyatakov). 6. Gosudarstvennyy nauchno-tekhnicheskiy
      komitet Estonskoy SSR (for Rautsep). 7. Gor'kovskiy sov-
      narkhoz (for Blagonravov). 8. Belorusskiy sovnarkhoz (for
      Grechikho, Shukhman). 9. Yaroslavskiy sovnarkhoz (for
      Druzhinin). 10. Bobruyskaya mashinno-meliorativnaya stantsiya
      (for Loyko). 11. Gipromestprom Gosplana RSFSR (for Chernakov).
      12. Mezhkolkhoznoye torfopredpriyatiye "Volosovskoye" Lenin-
      gradskoy oblasti (for Shornikov). 13. Vsesoyuznyy nauchno-
      issledovatel'skiy institut torfyanoy promyshlennosti (for Sopin).
                           (Peat industry)

GRECHIKHO, G.V.

GREVENSHCHIKOV, D.; VORONCHIKHIN, D.A., gvardii polkovnik, redaktor;
GRECHIKHO, G.V., redaktor; MIASNIKOVA, T.F., tekhnicheskiy redaktor.

[Cunning and resourcefulness in warfare] Voennaia khitrost' i
smetka. 3-e izd-.Moskva, Voen.izd-vo Ministerstva oborony SSSR
1955. 66 p. [Microfilm]   (MLRA 8:10)
        (Tactics)

GRECHIKOV, D.S., inzhener; OFENGENDEN, A.M., inzhener; POKRASS, L.M., inzhener.

Deoxidizing rimmed steel by ferromanganese in the ladle. Metallurg 2
no.6:13-15 Je '57.   (MLRA 10:6)

1. Stalinskiy metallurgicheskiy zavod.
           (Steel--Metallurgy)   (Ferromanganese)

GRECHIN, Boris Vasil'yevich; STEPANOVA, Anna Sergeyevna; BONDARENKO, M.,
red.; ABBASOV, T., tekhn. red.

[Uzbek Karakul sheep]Uzbekistanskaia karakul'skaia ovtsa.
Tashkent, Gosizdat UzSSR, 1961. 29 p.   (MIRA 15:11)
        (Uzbekistan--Karakul sheep)

GRECHIN, B.V.; BASHIROVA, N.G.

A wonderful example of service to agriculture. Zhivotnovodstvo
23 no.6:80-84 Je '61.   (MIRA 16:2)

1. Glavnoye upravleniye sovkhozov pri Sovete Ministrov
Uzbekskoy SSR.
                    (Uzbekistan—Karakul sheep)

GRECHIN, I.G.; STEFANOVSKIY, F.S.; SHEYNVAL'D, M.L.

Boring and casing of water wells in Odessa Province. Gidr. 1
mel. 12 no.6:32-36 Je '60.   (MIRA 13:7)

1. Odesskaya stroitel'no-montashnaya kontora.
                    (Odessa Province--Artesian wells)
                        (Pipe, Asbestos-cement)

GRECHIN, I. P.

The soils of the agronomy division of the Timiryazev Agricultural Experiment Station. I. P. Grechin. *Izvest. Timiryazev. Sel'skokhoz. Akad.* 1959. No. 1 (Whole No. 3), 127-44.—Org. matter content, pH, hydrolytic acidity, cation-exchange capacity, degree of base satn. are reported on a no. of sod-podzolized soils varying in degree of podzolization.   I. S. Ioffe

GRECHIN, I.P., kandidat sel'skokhozyaystvennykh nauk, dotsent.

Soils of the Forestry Experiment Station of the Timiriazev
Agricultural Academy.   Izv.TSKhA   no.1:118-127   '57. (MIRA 10:7)
(Forest soils)

NEPOMILUYEV, V.F., kand. biol. nauk; GRECHIN, I.P., kand. sel'skokhozyayst-
vennykh nauk.

Effect of different tillage methods of dynamics of microbiological
processes in turf-Podzolic soils [with summary in English]. Izv.
TSKhA no.2:137-144 '58.   (MIRA 11:6)
                        (Soil micro-organisms) (Tillage)

GRECHIN, I.P., dotsent, kand. sel'skokhoz. nauk; KOGOTKOV, A.Ya., aspirant

Investigating the oxygen balance of soils of the turf-Podzolic zone. Izv. TSKhA no.5:187-196 '59   (MIRA 13:3)
(Gases in soils)

GRECHIN, I.P., kand.sel'skokhozyaystvennykh nauk, dotsent

Effect of aerobic and anaerobic conditions on changes in turf-
Podzolic soils. Izv. TSKhA no.3:85-97 '60.   (MIRA 14:4)
            (Gases in soils)   (Podzol)

NEPOMILUYEV, V.F.; GRECHIN, I.P.

Characteristic features of microbiological processes in turf-
Podzolic soils depending on cultivation practices. Trudy Inst.
mikrobiol. no.7:87-95 '60.   (MIRA 14:4)

1. M_oskovskaya sel'skokhozyaystvennaya akademiya imeni K.A.
Timiryazeva.
                    (SOIL MICRO-ORGANISMS)   (TILLAGE)

GRECHIN, I.P.; CHEN YUN'-SHEN [Ch'eng Yun-shen]

Effect of different concentrations of gaseous oxygen
in the soil air on oxidation-reduction conditions.
Pochvovedenie no.7:106-110 '60.   (MIRA 13:7)

1. Moskovskaya ordena Lenina sel'skokhozyaystvennaya
akademiya im. K.A.Timiryazeva.
  (Oxygen) (Gases in soils) (Oxidation-reduction reaction)

GRECHIN, I.P., kand.sel'skokhozyaystvennykh nauk, CHEN YUN'-SHEN [Ch'eng Yün-sheng]

Dynamics of oxygen and carbonic acid in the soil air of turf-Podzolic soils. Izv. TSKhA no.6:68-79 '60.　　　　(MIRA 13:12)
　　　　　(Podzol)　　　(Gases in soils)

YARKOV, Sergey Petrovich, prof. [deceased]; prinimali uchastiye:
GRECHIN, I.P., kand. sel'khoz. nauk, dotsent; KAURICHEV, I.S.,
kand. sel'khoz. nauk, dotsent; KULAKOV, Ye.V., st. nauchnyy
sotrudnik; YARKOVA, M.A., pochvoved; TYURIN. I.V.. akademik,
otv. red.; PAVLOV, A.N., red. izd-va; YEGOROVA, N.F., tekhn.
red.

[Soils of the forest-meadow zone of the U.S.S.R.] Pochvy leso-
lugovoi zony SSSR. Moskva, Izd-vo Aknd. nauk SSSR, 1961. 317 p.
                                              (MIRA 14:5)

1. Kafedra pochvovedeniya Moskovskoy Ordena Lenina Sel'sko-
khozyaystvennoy Akademii im. K.A.Timiryazeva (for Grechin, Kau-
richev) 2. Pochvenno-agronomicheskiy muzey im. V.R.Vil'yamsa
(for Kulakov)
                        (Soils)

GRECHIN, I.P., kand. sel'skokhoz. nauk, dotsent

Effect of aerobic and anaerobic conditions on the change of properties in turf-Podzolic soils; based on investigations under natural conditions. Izv. TSKhA no.6:86-96 '61.

(MIRA 16:8)

(Podzol)   (Gases in soils)

GRECHIN, I.P., kand.sel'skokhoz.nauk, dotsent; KURLYKOVA, M.V., aspirant

Changes in the properties of turf-Podzolic soils as related to their oxygen and carbon dioxide content. Izv. TSKHA no.4:111-116
'62.
(MIRA 15:12)

(Podzol)   (Gases in soils)

MERSHIN, A.P., dots.; GRECHIN, I.P., dots., red.

[Methods manual on the use of aerial photographic
materials in soil mapping] Metodicheskoe rukovodstvo po
ispol'zovaniiu materialov aerofotos'emki pri pochvennom
kartirovanii. Pod red. I.P.Grechina. Moskva, Mosk. sel'-
khoz. akad. im. K.A.Timiriazeva, 1964. 62 p.
(MIRA 18:12)

GRECHIN, P. Yu.

Device for logging magnetic susceptibility. Avt. i prib. no.4:
62-64 O-D '64   (MIRA 18:2)

GRECHINSKAYA, L.T., inzh.; DONSKOY, D.I., kand. tekhn. nauk;
RYTCHENKO, V.I., kand. tekhn. nauk; ROZENBERG, L.I., kand.
tekhn. nauk; KOLYASINSKIY, Z.S., inzh.; GURMAN, V.S., inzh.;
LOBUSHEV, V.D., inzh.; YEMEL'YANOV, A.Ya., inzh.; LESNYAKOV,
F.I., red.; BODANOVA, A.P., tekhn. red.

[Technical specifications for the overhaul of the M-21 "Volga"
automobile]Tekhnicheskie usloviia na kapital'ryi remont avto-
mobilia M-21 "Volga." Moskva, Avtotransizdat. Pt.2.[Technical
specifications for checking and sorting parts of the M-21
"Volga" automobile]Tekhnicheskie usloviia na kontrol'-sortirovku
detalei avtomobilia M-21 "Volga." 1962. 400 p.   (MIRA 15:12)

1. Moscow. Nauchno-issledovatel'skii institut avtomobil'nogo
transporta. 2. Gosudarstvennyy nauchno-issledovatel'skiy insti-
tut avtomobil'nogo transporta (for all except Lesnyakov,
Bodanova).
                (Automobiles--Maintenance and repair)

GRECHIN, M.A.

SOV/124-58-5-5412

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 5, p 64 (USSR)

AUTHOR: Grechin, M.A.

TITLE: An Experimental Investigation of the Hydromechanic Character-
istics of Propeller Profiles (Eksperimental'noye issledovaniye
gidromekhanicheskikh kharakteristik vintovykh profiley)

PERIODICAL: Tr. Tsentr. n.-i. in-ta morsk. flota, 1956, Nr 7, pp 82-95

ABSTRACT: Analytical results are given of wind-tunnel tests carried out
at the Leningrad University wind tunnel by the Tsentral'nyy
nauchno-issledovatel'skiy institut morskogo flota (Central
Scientific Research Institute of the Maritime Fleet) of a series
of propeller profiles, the purpose of the tests being to refine
the logarithmic diagram which V.M. Lavrent'yev had compiled
in 1945-46 by analyzing and averaging various experimental
propeller data available at that time. Selected for these
special tests was a base series consisting of five systematic
propeller profiles with thickness ratios ranging from 20% to
5%. To clarify the influence of the profile camber, tests were
made of four propeller profiles with various amounts of cam-
ber of the base propeller-profile types No. 3 and 4 (with

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SOV/ 124-58-5-5412

An Experimental Investigation (cont.)

thickness ratios of 10 and 7.5 percent respectively). The investigation in-
cluded a determination of the chordwise and normal-force coefficients and
the section pitching-moment coefficient of the profiles in a curved-flow
test and a determination of the pressure distribution which was done by
means of pressure orifices at 23-25 points on each of the nine models over
an angle-of-attack range up to the stall. Ultimately the Lavrent'yev dia-
gram is derived, establishing the connection between the elements of a
propeller blade and hydrodynamic characteristics of the propeller.

I.V. Girs

1. Propellers (Marine)--Hydrodynamic characteristics   2. Propellers (Marine)
--Test results   3. Wind tunnels--Applications

Card 2/2

GRECHIN, M.A.

Calculating characteristics of speeding up and slowing down
ships. Trudy TSNIIMF no.15:97-109 '58.   (MIRA 11:8)
          (Propellers) (Ship propulsion)

GRECHIN, M. A., Cand Tech Sci (diss) -- "Investigation of the operation of a collar screw when maneuvering, and a computation of the driving and braking characteristics of a ship". Leningrad, 1960. 13 pp (Min River Fleet RSFSR Leningrad Inst of Water Transport), 250 copies (KL, No 15, 1960, 134)

GRECHIN, M.A., kand.tekhn.nauk

Combined work of the propeller and the engine when a ship
pitches in a heavy sea (evaluation of the ship's loss of speed).
Trudy TSNIIMF 7 no.35:63-73 '61.   (MIRA 14:12)
                    (Ships--Hydrodynamic impact)
                    (Ship propulsion)

GRECHIN, M.A., kand.tekhn.nauk

Propulsive and maneuverable qualities of the motorship "Ugleural'sk".
Inform.sbor.TSNIIMF no.52. Tekh.ekspl.mor.flota no.5:79-92 '60.
(MIRA 15:2)

(Ship trials)

AFANAS'YEV, Konstantin Arkad'yevich, inzh.; GRECHIN, Modest Alekseyevich,
inzh.; KORCHAGIN, Mikhail Ivanovich, kand.tekhn.nauk; LOGINOV,
Sergey Petrovich, kand.ekon.nauk; MIROSHNICHENKO, Il'ya Petrovich,
kand.tekhn.nauk; RAPOPORT, Leonid Il'ich, kand.tekhn.nauk;
SYROMYATNIKOV, Viktor Fedorovich, kand.tekhn.nauk. Prinimali
uchastiye: RAYEVSKAYA, Ye.A., inzh.; GRIGOR'YEV, Ya.I., inzh.
STRUMPE, P.I., red.; MARCHUKOVA, M.G., red.izd-va; LAVRENOVA, N.B.,
tekhn.red.

[Modernization of seagoing cargo vessels] Modernizatsiia morskikh
transportnykh sudov. Pod obshchei red. P.I.Strumpe. Moskva, Izd-vo
"Morskoi transport," 1960. 306 p.

(MIRA 14:1)

(Freighters--Equipment and supplies)

GRECHIN, M.A., kand.tekhn.nauk

Seaworthiness of the motorship "Meteor" with underwater wings.
Inform. sbor. TSNIIMF no.59. Tekh. ekspl.mor.flota no.7:38-44 '61.
(MIRA 16:6)

(Motorships) (Hydrofoil boats)

GRECHIN, Modest Alekseyevich; GULIYEV, Yu.M., red.; ALEKSANDROV,
L.A., red. izd-va; KHLOPOVA, L.K., tekhn. red.

[Changes made in screw propeller elements according to
results of actual tests] Izmenenie elementov grebnykh
vintov po rezul'tatam naturnykh ispytanii. Moskva, Izd-vo
"Morskoi transport," 1962.   45 p.   (MIRA 15:7)
                        (Propellers)

BLAGOVESHCHENKIY, S., doktor tekhn.nauk, prof.; VOZNESENSKIY, A., kand.tekhn. nauk; VOYTKUNSKIY, Ya., kand.tekhn.nauk, dotsent; GERASIMOV, A., kand.tekhn.nauk, dotsent; GRECHIN, M., kand.tekhn.nauk; DORIN, V., kand.tekhn.nauk; DOROGOSTAYSKIY, D., doktor tekhn.nauk; KOSOUROV, K., doktor tekhn.nauk, prof.; KRIVTSOV, Yu., kand.tekhn.nauk; MURU, N., kand.tekhn.nauk, dotsent; SEMENOV-TYAN-SHANSKIY, V., doktor tekhn. nauk, prof.; SOLOV'YEV, V., kand.tekhn.nauk, dotsent; TOPORKOV, I., inzh.; FIRSOV, G., doktor tekhn.nauk, prof.; FISHER, A., inzh.; KHRUSTIN, V., kand.tekhn.nauk, dotsent; EYDEL'MAN, D., inzh.

Concerning P.Khokhlov's article "Determining the center of gravity of a vessel during an inclining experiment with trim difference." Mor. flot 23 no.5:33-34 '63.

(Stability of ships)   (MIRA 16:9)

KURZON, A.G., doktor·tekhn.nauk; GRECHIN, M.A., kand.tekhn.nauk;
MEZHERITSKIY, A.D., kand.tekhn.nauk

Power plant capacity on air-cushion ships. Sudostroenie 29
no.10:18-22 O '63.

(MIRA 16:12)

L 02415-67   EWP(m)/EWT(d)/EWT(1)/EWP(h)/EWP(1)

ACC NR: AT6014314   (N)

SOURCE CODE: UR/2752/63/000/049/0082/0101

AUTHOR: Grechin, M. A. (Candidate of technical sciences)

ORG: None

TITLE: Calculating the lift and power of boats operating on air cushions

SOURCE: Leningrad. Tsentral'nyy nauchno-issledovatel'skiy institut morskogo flota. Trudy, no. 49, 1963. Gidromekhanika sudna (Hydromecnanics of ships), 82-101

TOPIC TAGS: air cushion vehicle, aerodynamic lift, air flow, Euler equation, motion stability

ABSTRACT: A method is presented for calculating the lift and power required for raising vehicles with air chambers and continuous annular nozzles. Both types of vehicles are studied. Vehicles with air chambers are structurally very simple since they do not require air ducts. Air is forced under the dome of the vehicle and escapes along its periphery. Lift is produced by the pressure increase in the lower part of the dome. Expressions are given for calculating the rate of airflow, lift, power required for sustaining the vehicle on the air cushion and specific power. All these parameters are determined for circular vehicles. The basic prin-ciples for operation of vehicles with curtain type air cushions are also discussed. The use of this type of vehicle seems more feasible for marine operations than

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L 02415-67
ACC NR: AT6014314

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vehicles with air chambers. The region of increased pressure is much more limited in vehicles with annular air curtains than for those using air chambers. The air curtain is formed by the air stream from the nozzle unit. A figure is given show-ing the principle of operation for this type of device. An air stream leaving the nozzle at a given angle with respect to the vertical is deflected and disperses along the horizontal surface. The equation of Euler is used for determining air stream variation for every possible cross section in the case of an ideal incom-pressible liquid. Expressions are given for calculating the lift of this type of vehicle and the power required for holding it at a given distance from the surface. Expressions are also given for calculating the resistance encountered by vehicles operating on air cushions during motion. The results of the study show that the specific power for boats operating on air cushions increases sharply with increased height above the operating surface. This is caused by increased air consumption and results in additional pressure requirement on the fan. The nozzle type air cushion is much more efficient than the air chamber type since it does not lose as much power on lift. The results also show that an optimum angle of nozzle declina-tion exists for each nozzle diameter and lift height with respect to given vehicle dimensions. A graph is given for determining this angle. Though theoretically a circular air cushion is most efficient, experience shows that this causes power losses expended on motion of the boat or vehicle. In designing boats operating on air cushions it is necessary to consider these conditions and to adopt oval de-signs. Optimum air cushion pressures increase with vehicle velocity. The proposed

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L 02415-67

ACC NR: AT6014314

method for calculating the power of boats operating on air cushions is recommended for determining their economic and operational indices. Orig. art. has: 11 figures, 2 tables, 58 formulas.

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 001

Card   3/3

L 05654-67 EWP(k)/EWT(m)/T-2/EWP(w)/EWP(v)   IJP(c)   EM

ACC NR: AT6025573   (N)   SOURCE CODE: UR/2753/66/000/072/0053/0059

50
B+1

AUTHOR: Grechin, M. A. (Candidate of technical sciences)

ORG: None *

TITLE: Effect of nonstationary conditions on the hydrodynamic characteristics of a screw propeller in the initial period of reversal

SOURCE: Leningrad. Tsentral'nyy nauchno-issledovatel'skiy institut morskogo flota. Trudy, no. 72, 1966. Gidromekhnika sudna (Hydromechanics of ships), 53-59

TOPIC TAGS: propeller blade, hydrodynamics, fluid mechanics, marine engineering

ABSTRACT: The author considers a lightly loaded isolated screw propeller operating in an infinite flow of ideal incompressible liquid assuming that the angles of attack for the elements of the blade are vanishingly small so that the associated circulation at each element of the blade is variable. The vortex system of an m-bladed propeller is considered where the circulation is constant with respect to radius and varies in time. The expressions derived are used for determining the effect which the free vortex system has on the magnitude of the induced velocities during the reversal period from the moment when the load is removed from the main engine until maximum negative torque is reached in the hydraulic turbine. It is found that the vortex system shortens this period as compared with steady-state motion. However, since practical

UDC: 629.12:532.582.5.001.5

Card 1/2

USSR / Pharmacology. Toxicology. Various Preparations.   V

Abs Jour   : Ref. Zhur - Biologiya, No. 3, 1959, 14000

Author   : Grechin, N. A.
Inst   : —
Title   : Experiments with Treatment of Chronic and Sub-
             acute Diseases of the Locomotor Apparatus and
             Peripheral Nervous System With Products of
             Essential Oil Derivatives.

Orig Pub   : Zdravookhraneniye (Kishinev), 1958, No. 3, 20-24

Abstract   : No abstract

Card 1/1

GRECHIN, N. K. Eng.

Excavating Machinery

New type of excavator at the Kharkov plant. Mekh. stroi. 10 No. 3, 1953.

9. **Monthly List of Russian Accessions**, Library of Congress, June 1953, Unclassified.

USSR/ Engineering -Building equipment

Card   1/1   Pub. 128 - 1/25

Authors   :   Grechin, N. K.

Title   :   Problems in development of construction and road building machinery

Periodical :   Vest. mash. 1, 3-13, Jan 1955

Abstract   :   The post-war and present trends in development of construction and
                road building machinery are summerized. Some 600 types of construction
                and road buidling equipment were produced in post-war years and the
                production of heavy road-building equipment in 1954, increased 10.5
                times over 1946. The following equipment is described: single and
                multi-bucket excavators, scrappers, graders, rollers, derrick cranes,
                loading cranes, tar and cement spreaders, cement mixers, and the tile
                and brick presses. Illustrations.

Institution :   ......

Submitted   :   ......

GRECHIN,N.K., inzhener, laureat Stalinskoy premii

Basic tasks for the further development of building and road construction machinery production. Mekh.stroi.12 no.9:3-8 S '55.

(MLRA 8:11)

1. Zamestitel' ministra stroitel'nogo i dorozhnogo mashinostroyeniya.

(Building machinery) (Road machinery)

Translation M-951. 2 Feb 56

GRECHIN, N. K.

"Tasks for the Development of Construction and Road Machine Building," Vest Mash,
Vol 35, No 1, pp 3-13, 1955

Translation   M-405, 29 Apr 55

GRECHIN, N.K.

Standardization, simplification and normalization of building and road-
building machinery. Standartizatsiia no.3:11-18 My-Je '56. (MLRA 9:9)

1.Zamestitel' ministra stroitel'nogo i dorozhnogo mashinostroyeniya.
(Road machinery--Standards)(Building machinery--Standards)(Simplification
in industry)

GRECHIN, N.

Standardization and unification of building and road machinery.

P. 153 (Mechanisace. Vol. 4, No. 5, May 1957, Praha, Czechoslovakia)

Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 2,
February 1958

SOKOLOV, K.M.; YEVSTAFEYEV, S.V.; ROSTOTSKIY, V.K.; GRECHIN, N.K.; STANKOVSKIY, A.P.; BAUMAN, V.A.; BERKMAN, I.L.; BORODACHEV, I.P.; BOYKO, A.G.; VALUTSKIY, I.I.; VATSSLAVSKAYA, L.Ya.; VOL'FSON, A.V.; DOMBROVSKIY, N.G.; YEGNUS, M.Ya.; YEFREMENKO, V.P.; ZIMIN, P.A.; IVANOV, V.A.; KOZLOVSKIY, A.A.; KOSTIN, M.I.; KRIMERMAN, M.N.; LINEVA, M.S.; MERENKOV, A.S.; MIROPOL'SKAYA, N.K.; PETROV, G.D.; REBROV, A.S.; ROGOVSKIY, L.V.; SMIRNOV, G.Ya.; SHAFRANSKIY, V.N.; SHIMANOVICH, S.V.; SHNEYDER, V.A.

Evgenii Richardovich Peters; obituary; Mekh. stroi. 15 no.1:3 of cover
Ja '58.   (MIRA 11:1)
              (Peters, Evgenii Richardovich, 1892-1957)

GRECHIN, P.

Mechanized leading barge. Muk.elev.prom.22 no.5:28-29 My '56.
(MIRA 9:9)
1.Glavnyy inzhener Chistopol'sksy realizatsionney nazy Zagotzerno.
(Grain-handling machinery) (Barges)

GRECHIN, P. Yu.

Improved logging coupling. Sbor.luch.rats.predl. no. 2:26-27
'63.

Feeding and recording magnetic susceptibility unit operating on
a 50 cycle frequency.

Simplified connecting attachment to the hydroscopic IG-2 in-
clinometer. Ibid.:55-56   (MIRA 17:5)

1. Dnepropetrovskaya geofizicheskaya ekspeditsiya.

GRECHIN, P.Yu.; LAVRENKO, I.V.

Capillary ball pen attached to the PASK-8 potentiometer of the
AEKS-900 logging station. Sbor.luch.rats.predl. pt. 2:32 '63.
(MIRA 17:5)

1. Dnepropetrovskaya geofizicheskaya ekspeditsiya.

Grechin, V A

86-58-3-24/37

AUTHOR: Grechin, V.A., Sen Eng Lt

TITLE: Working Day of an Engineer (Rabochiy den' inzhenera)

PERIODICAL: Vestnik vozdushnogo flota, 1958, Nr 3, pp 62-65 (USSR)

ABSTRACT: The article describes the working day of an engineer in
            an air force unit. At the beginning of his article the
            author states that one of the very difficult tasks of
            technical personnel is to prepare the aircraft for flights
            in cases where the same aircraft is flown by several pilots
            in succession on a flying day. The aircraft equipment can
            be checked only during the refueling time between the
            flights. With the establishment of a seven-hour working
            day, the personnel also have some difficulties in coping
            with the amount of work that has to be performed. Among
            other things, the author mentions that at the present time
            aircraft equipment is checked with the aid of special mea-
            suring instruments. Of interest is the fact that the repre-
            sentatives of factories frequently visit the unit engineer
            and discuss various problems connected with aircraft equipment

AVAILABLE: Library of Congress
Card 1/1

AUTHOR: Grechin, V. A., Senior Engineer, Lt

TITLE: Technical Exploitation of Aircraft Equipment   (Tekhnicheskaya ekspluatat-
siya aviatsionnogo oborudovaniya)

PERIODICAL: Vestnik vozdushnogo flota, 1958, No. 11, pp 62-66 (USSR)

ABSTRACT: In general, defects in the equipment of supersonic fighters in the
author's unit were usually caused by cable breaks in electric circuits, break-
downs or short circuiting, changed parameters in condensers or resistances,
deranged adjustment or regulation in various systems, incorrect operation of
feed sources, and leaky piping in air or oxygen systems. The following nine
"most interesting" defects which occurred in that unit are discussed in detail
in the article. (1) The dynamic-pressure piping in an airspeed indicator leaked.
(2) a tube supplying fuel to the engine broke. (3) screws securing cables to a
unit (the latter was attached to the engine) were turning off under vibration;
impaired operation of the engine resulted. This defect was remedied by "put-
ting the screws on the paint", and by periodic checking. (4) a moisture-exclud-
ing lid, used when the aircraft was on the ground, failed to protect satisfact-
orily and as a result, a push button, controling flaps [shchitki-zakrylki],
became stuck by icing. This was remedied by drilling drain holes for moisture.
(5) The filter in the cabin air-temperature regulator became dust clogged after

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Technical Exploitation of Aircraft (Cont.)   SOV/86-58-11-19/37

operating for 80-90 hrs.; it resulted in a defective supply of air to the cabin
(in winter), with a possibility of mechanical damage. Cleaning the filter screen
by blowing compressed air through it was recommended. (6) The installation of
the "barospeedograph" in the aircraft was a problem for some time; finally, a
satisfactory place for this instrument was found inside the surface, beside
the gun. (7) An improved compass is now being installed in fighters. The trans-
ition from the old to the new model caused certain difficulties which "rational-
izers" removed by combining the new model with some parts of the old one; some
changes on the instrument panel were also made. This was done only in a single
pair of aircraft. A similar alteration was carried out in the TL-1 ground trainer.
The use of the compass presents some difficulties due to dissimilar installation
of some units making up the complete compass system in different modifications
of the same aircraft. (8) The booster transformer is the most vulnerable part
of that compass. The compass gets out of service when a breakdown occurs in
the transformer. (9) The readings of the exhaust gas thermometer drop after
the engine has run for 70 to 80 hours because the insulation covering the thermo-
couple then becomes charred and turns into powder under action of heat. With a
cold engine, it is sometimes impossible to determine by means of a tester which
thermocouple went out of service. There are 3 photographs and 1 diagram.

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GRECHIN, V.A., inzhener-kapitan

It is the duty of all personnel to prepare the air-
plane for flight. Vest.Vozd.Fl. no.7:65-67 Jl '60.
(MIRA 13:7)
(Airplanes--Maintenance and repair)

1. GRECHIN, V.P.

2. USSR (600)

4. Technology

7. Casting alloy cast iron. Moskva, Oborongiz, 1952

9. <u>Monthly List of Russian Accessions,</u> Library of Congress, March,1953. Unclassified.

Grechin, V. P.

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18   18

Magnesium-iron castings. N. I. Nemilov, V. M. Koro-
lev, A. A. Simkin, and V. P. Grechin. U.S.S.R. 102,675,
Apr. 30, 1953. Mg-Fe is treated with a flux contg. feld-
spar and an equal amt. of glass cullet. The latter is added
to prevent black spots in the casting.   M. Hoseh

GRECHIN, V.P.

Dr A., Candidate of Technical Sciences

Third Scientific and Technical Conference in Kiev on the improvement of the Wear Resistance and Service Life of Machines (Tret'ya Kiyevskaya nauchno-tekhnicheskaya konferentsiya po povysheniyu iznosostoykosti i sroka sluzhby ...)

Vestnik Mashinostroyeniya, 1958, ...

The conference was organised by the Kiyev region of the NTO Mashprom (The Scientific and Technical Organisation of the Mechanical Engineering Industry) and by the Institute of Mechanics of Building Structures, Ac.Sc. Ukrainian SSR (Institut stroitelnoy mekhaniki AN USSR). 430 delegates representing the major institutions of the Ac.Sc. USSR and of the Ukrainian SSR, the specialised research agencies and the large Soviet plants heard and discussed 90 papers devoted to the study of the mechanism of disintegration of surface layers in machine components and to new methods of improving the wear life of components.

In a paper by Academician S.V. Serensen, entitled "... Related to Wear and Fatigue", a survey of Russian and foreign studies was given with emphasis on fatigue failures caused by wear, both as a result of the mechanical consequences due to

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The Third Scientific and Technical Conference in Kyev on the Improve-
ment of the Wear Resistance and Service Life of Machines

unequal wear and the formation of clearances in assemblies
as a result of a change in the physical and chemical condition
of contact surfaces.
R.D. Grozin, Corresponding Member of the Ac.Sc. Ukrainian SSR, in
a paper entitled "The Complex Method of Analysis of Components
Working Under the Conditions of Rolling Friction" presented a
method which includes the combined use of electron microscope,
X-ray diffraction and spectroscopic analyses to judge the con-
dition of the surface layers in association with wear tests and
static mechanical tests under tri-axial non-uniform compression
at different temperatures. It is claimed that with the help of
this method, the relation between the contact endurance strength
of steel and the factors defining the condition of the surface
can be established.
In a paper "On Temperature Measuring Methods in the Friction
Process between Solid Bodies", by S.A. Sukhov, Candidate of
Technical Sciences, a method for measuring the temperature
gradients in the immediate vicinity of the friction surface
with the help of a natural thermocouple was presented. Both
sliding bodies (pin and ring) are made of the same material, but
Card2/8 the pin end face is covered with a thin layer of another metal

...Scientific and Technical Conference
...the Wear Resistance and Service Life of Machines

...which constitutes the natural thermocouple of which one junction is the sliding surface and the other is the bond between the face and the coating metal.

Great interest was aroused by the paper "The Variation of Wear Resistance of Certain Anti-friction Alloys under Nuclear Radiation" by B.L. Slin'ko. Precipitation-hardening alloys (beryllium copper and nickel silicon bronze Bp. KH 1-3) have their strength and wear resistance increased by nuclear radiation. Alloys changing their properties mainly as a result of phase transformations and having a higher re-crystallisation temperature change their properties insignificantly.

In a paper "Foundations of the Cavitation-erosion Failure of Ferrous Alloys", I.N. Bogachev, Doctor of Technical Sciences, and R.I. Mints, Candidate of Technical Sciences, generalised the studies of the effect of the chemical and phase composition of iron carbon alloys on their cavitation erosion resistance. Increasing the carbon content from 0.023 to 1.2% improves the erosion resistance. The effect of alloying is due solely to the metallographic structure obtained. A pronounced improvement of erosion resistance is obtained in spheroidal graphite cast iron

Engineer L. A. Chatynyan in his paper [illegible] of Nickel Alloys under Dry Friction at Elevated Temperatures reported the results of his test which showed nickel alloys to have the best wear resistance at high temperatures, whilst the initial hardness is of little consequence. The optimum composition of a new alloy with a high wear resistance at 400 °C was given, whilst high-speed steel and ordinary chromium steels have little wear resistance under dry friction at high temperatures. V. P. Grechin, Candidate of Technical Sciences, concluded in his paper "The Heat Resistance of Cast Iron as the Main Factor in its Wear Resistance under Sliding Friction" that the hardness of cast iron at high temperatures (up to 850 °C) determines its wear resistance. Based on numerous studies of various cast irons, recommendations for alloying and for the application of cast irons under different conditions were given.

It was noted by N. I. Kovalenko, Candidate of Technical Sciences, in his paper "The Wear Resistance of Wire Ropes" that the rubbing down of a wire rope is caused by an abrasive medium and its failure occurs before fatigue sets in. The author recommended

deposition of anti-friction metal aluminium upon steel pulleys. In unlubricated operation, such deposits increase the wear life of wire ropes by a factor of 2-3.

F.I. Frumin, Candidate of Technical Sciences, in his paper "Alloys for Wear-resistant Hard Facing Deposits", stated the theoretical basis and methods of alloying to obtain the desired results and surveyed the fields of application of different methods of deposition on wearing components.

In his paper, "Electric Slag Method of Hard Facing for Wear Resistance", I.K. Pokhodnya, Candidate of Technical Sciences, suggested the electric slag process for hard facing of different components and concluded that this method is appropriate when large quantities of metal have to be deposited or when large numbers of components require treatment.

M.V. Simonenko, Engineer, suggested in his paper "The Electrolytic Diffusion Method of Making Bi-metal Components" a novel method of manufacturing copper base alloys. The alloying proceeds at a temperature much below the fusion temperature of copper. Great economies are achieved in labour cost and in scarce metals. Small scale and automatic production procedures can be applied. Service

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Scientific and Technical Conference in Kiyev on the improv-

In a paper "Electric Spark Hardening of ____" S.S. Astaf'yev, Candidate of Technical Sciences, reported on a novel electric spark hardening process. The surface of the steel is alloyed with the electrode metal, as a result of instantaneous heat impulses occuring in rapid succession during spark discharges. A special treatment head makes high output possible. The wear resistance of machine components is said to increase 2-6 times at room temperatures and 4-5 times at elevated temperatures.

In a paper "New Anti-friction Materials and Coatings", I.Ya. Al'shits reported on work designed to evolve novel substitutes for babbitt and high-tin-content bronze alloys. The following have given good results: a) Moulded timber materials and plastics based on phenolic and other resins with different fillers (cord and cotton fibres and others), in conjunction with water lubrication. b) Metallised graphite, nylon and others for elevated temperatures. c) Graphite-loaded materials and compositions of resin and graphite for working in corrosive media.

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